A study was made to determine the rate of post operative wound infection in general surgeries. The aim of this study was to isolate and characterise the pathogenic bacteria, to evaluate their susceptibility to different routinely used antibiotics. To find out the source of infection, environmental samples (from operation theatres and wards) were also analysed during the study.

Following are the conclusions from the present study.

**CONCLUSION:**

- Looking at the prevalence scenario in environment the overall rate of post operative wound infection is 09.79%. This is in line with the studies cited in the references. The results match with Nilesh Marvania\(^{158}\) (08.50%) & Lilani et. al.\(^{136}\) (08.95%). (Result:1)

- Age plays a major factor in incidences of post operative wound infection & it is highest in the age group of 60-70 years. Probably waning age is one of the supportive factors in post operative wound infection.(Result:2-B)

- Males (56%) have slightly higher infection rate than females (44%). (Result:2-A)

- Out of total number of infected cases around 9% shows negative bacterial growth. From this we can conclude that the diagnostic procedure to find out post operative wound infection requires timely sample collection in a manner that reflects the thorough sterile procedure so that undue waste of time & energy can be avoided. (Result:3)

- It has been observed that the post operative wound infection is due to one type of predominating culture & it is about 92%. Few (about 8%) of the patient’s wounds were found to contain mixed isolates.(Result:3)

- *Staphylococcus aureus* is the most predominant organism in post-operative wound infection out of total organisms isolated in the study.(Result-4)

- Majority of post operative wound infections are dominated by Gram Negative Bacilli (56%). (Result-5)
For gram positive isolates, Vancomycin (99.75%) is the best suggested antibiotic for treatment followed by synercid (99.30%), Linezolid (99%), Tetracycline (94%) & Chloramphenicol (93%). (Result-15)

For the gram negative isolates, Meropenem (93%) is the drug of choice followed by Imipenem (91.80%), Cefotetan (84.50%), Amikacin (77.20%) & Cefoxitin (68%). Combination of more than one antibiotic may give better results & it is worth trying to relieve the patient. (Result-14)

The rate of surgical infection is lower (about 7%) in case of clean surgery & higher (about 12%) with clean-contaminated surgery class. (Result-6)

On studying, it is observed that the rate of post operative wound infection was high among surgeries of gangrene (22.41%) followed by large bowel surgery (20.69%) & diabetic foot surgery (18.17%). (Result-7)

Patients operated under emergency condition, who do not have any antibiotic cover, consist of much higher risk of post operative wound infection (17.93%) in comparison with elective surgery, which have low risk of post operative wound infection (07.62%). (Result-8)

Higher the duration of the surgery, greater is the risk of post operative wound infection. Infection rate is lower in duration of less than sixty minutes and higher in duration of more than two hours of surgery. (Result-9)

Pre-operative & post-operative hospital stay also determines the rate of post operative wound infection. Larger the pre-operative hospital stay greater the chance of post operative wound infections. (Result-10)

The rate of post operative wound infection is also governed by the number of persons present in the operation theatre. (Result-11)

Pre operative antibiotic therapy is very effective in control of post operative surgical wound infection, the rate of infections in patients, administered antibiotics pre-operatively is low and it was high in patients of non administrated preoperative antibiotic. (Result-12)

On repetitive study, it has been observed that post operative wound infection isolates increases their resistant power against various antibiotics and during our entire study period it is observed that the antibiotics which were sensitive earlier to the organism turns out to be
resistant later on. In fact, the susceptibility to antibiotics constantly decreased while multi-resistant *Pseudomonas* and *Staphylococcal* strains were isolated with increasing frequency.

- Preventive pre-operative prophylaxis can decrease the incidence of wound infection. Cefazolin is the most used agent for surgical prophylaxis in our hospitals & surgical outlets but can be ineffective against the increasingly common wound pathogens methicillin-resistant *S. aureus*, methicillin-resistant coagulase-negative staphylococci, *P. aeruginosa*, and other species of gram negative rods.

- In developing countries like ours, antibiotic treatments are even without the study of antibiogram of the isolate started. This non judicial use of antibiotics results in development of higher and higher resistance among the bacteria. We strongly believe that this procedure of non judicial use of antibiotic treatment should be discouraged and a close collaboration between surgeons and microbiologists is needed.

- It is now the right time to select proper prophylactic mean for the patients during surgery so that the chances of post operative wound infections can be eliminated or reduced to lowest rate. Can broad spectrum antimicrobial agents or drug combinations and stronger resistance to enzymatic degradation serve this purpose?

From the above conclusions, we come to the following recommendations in the best interest of the patients.

- Post operative wounds should not be exposed for prolonged period unduly during the course of dressing.
- There should be periodic program of the environmental monitoring system and the antibiotic susceptibility pattern of operative outlet & it should be strictly followed. The resulting outcome should be viewed seriously to reduce the chances of post operative wound infection.
- Most of the post operative wound infections are by nosocomial pathogens. Our findings demonstrate the widespread problem of antibiotic resistance among nosocomial pathogens. Continued
Conclusion

surveillance is necessary to guide appropriate empirical therapy for postoperative wound infections.

- It is imperative that all professionals should play an active role in infection control within their organisation and more resources should be provided to encourage good antibiotic practice and good hygiene in hospitals.

- Samples of disinfectants and antiseptics used in wards and surgical theatres should be checked for efficiency against microbial pathogens.

- Post operative wound infections are a serious problem and leads to increase in the death rate or otherwise the economic loss to a patient & to a nation. Judicial use of antibiotics in post operative wound infections is necessary.

- The advancement in diagnosis has now become inevitable. Every surgical ward and operation theatre dealing with the life of a patient must be equipped thoroughly and monitoring should be carried out frequently. In order to confirm the role of contaminated inanimate surface as real source of bacterial cross-infection in hospital, further study with the aid of molecular techniques is unavoidable.

- We intend to continue our research work in the better interest of post operative wound infection patients and in the best interest of scientific community.